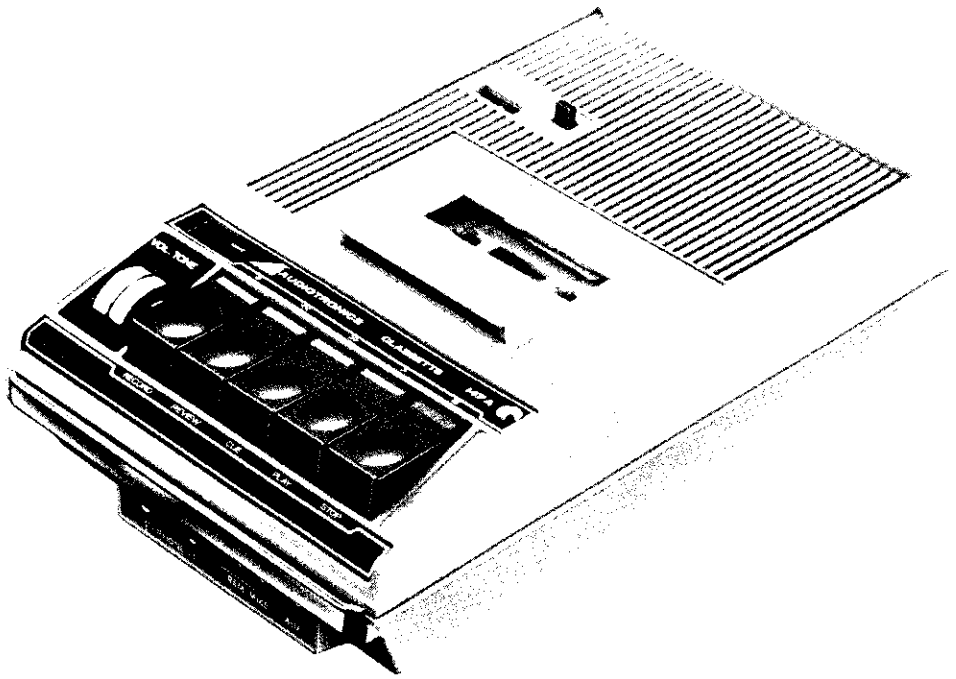
AUDIOTRONICS

AC/DC CASSETTE TAPE RECORDER
SERVICE DATA
Designed, Engineered and Manufactured by Audiotronics

MODEL 147A

Manual PR 327
August, 1977



SPECIFICATIONS*

POWER SOURCE: – 120 VOLTS AC 50/60
6 Watts
– (4) 1.5 VOLT "C" BATTERIES

POWER OUTPUT . . . . . 500 MW RMS MIN.

FREQUENCY RESPONSE . . . . . 100-8000 Hz ± 6 db

S/N RATIO . . . . . 40 db MIN.

ERASE EFFECT . . . . . 55 db MIN.

CROSSTALK . . . . . 55 db MIN.

HUM & NOISE –Volume Maximum .25 MV MAX.
Volume Minimum .10 MV MAX.

RECORD SYSTEM . . . . . AC BIAS

ERASE SYSTEM . . . . . DC

TAPE SYSTEM . . . . . COMPACT CASSETTE

SPEED DEVIATION . . . . . .2% MAX

WOW & FLUTTER . . . . . 0.3% MAX.

FAST FORWARD &
REWIND TIME . . . . . 80 SECONDS
FOR A C-60 CASSETTE

DIMENSIONS . . . . . 5-3/4 x 9-7/8 x 2-7/8

TERMINALS –TWO 1/4" PHONE JACKS.
(SEE WARNING, PARAGRAPH
16 OF CUSTOMER OP INST'N)

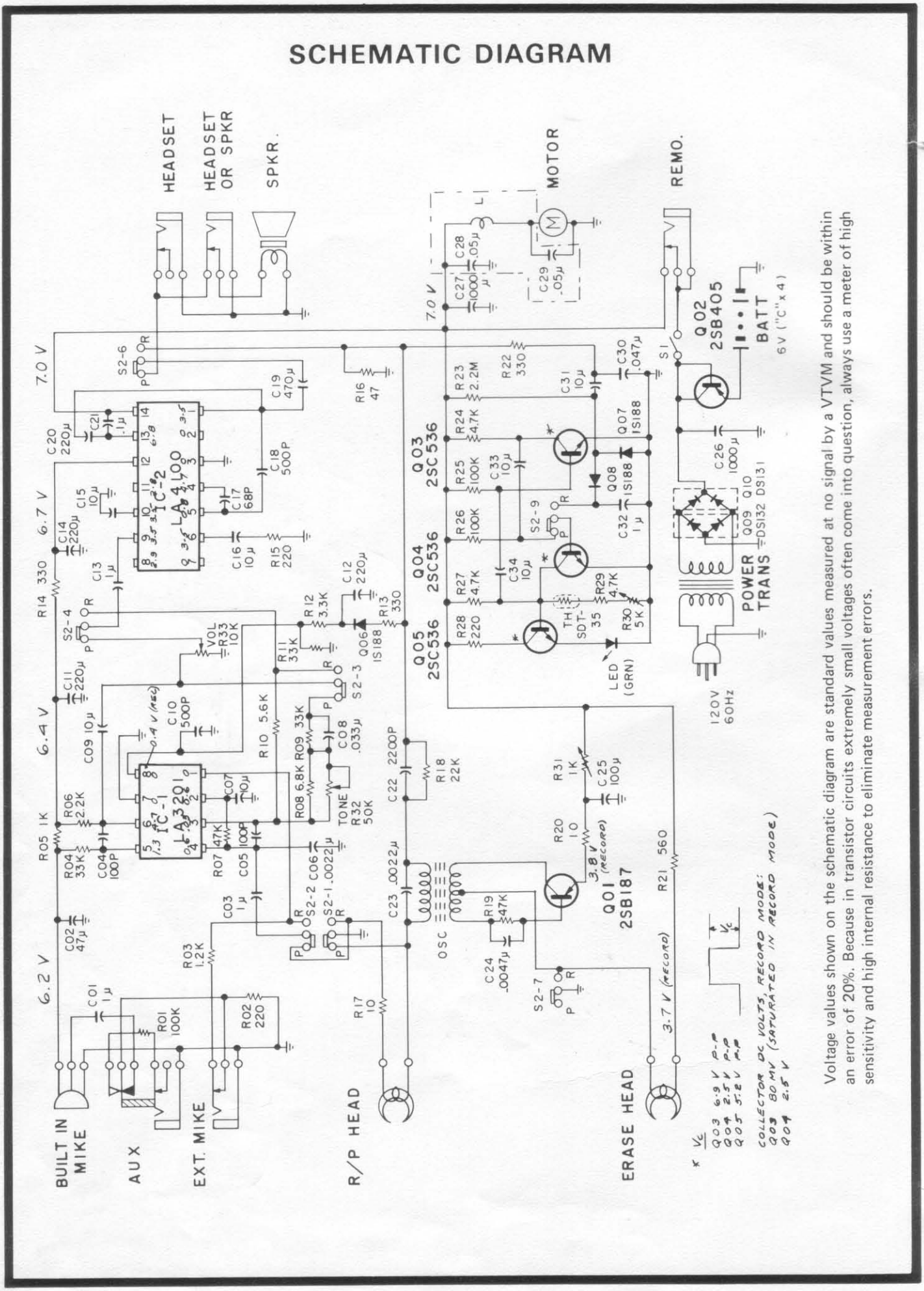
–DUAL JACKS FOR AUDIOTRONICS
MICROPHONE AM 14 (WITH SWITCH)

–AUXILIARY INPUT JACK
(HIGH IMPEDANCE)

WEIGHT . . . . . 3½ lbs.

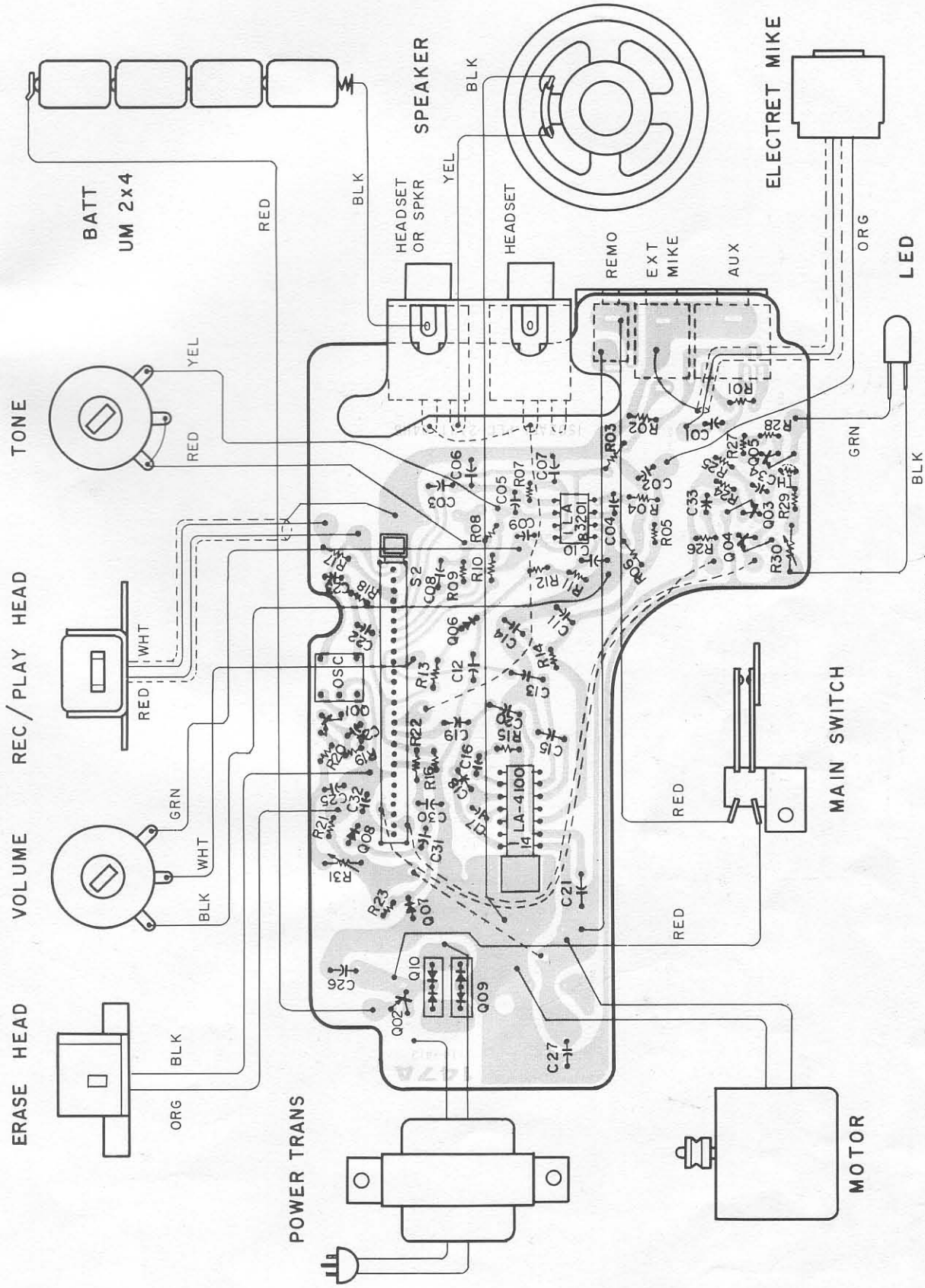
*All Specifications subject to change without notice.

SCHEMATIC DIAGRAM

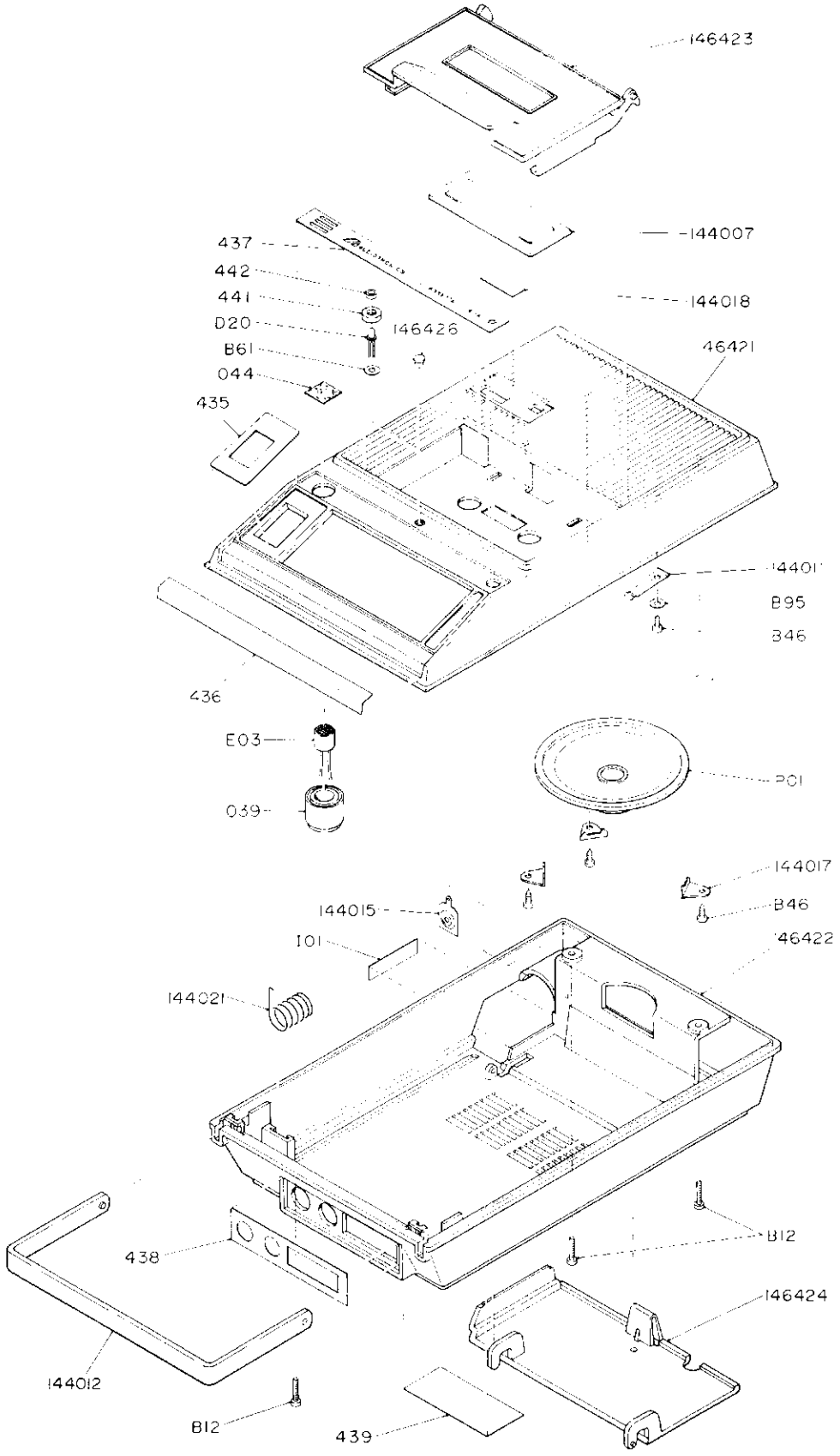


Voltage values shown on the schematic diagram are standard values measured at no signal by a VTVM and should be within an error of 20%. Because in transistor circuits extremely small voltages often come into question, always use a meter of high sensitivity and high internal resistance to eliminate measurement errors.

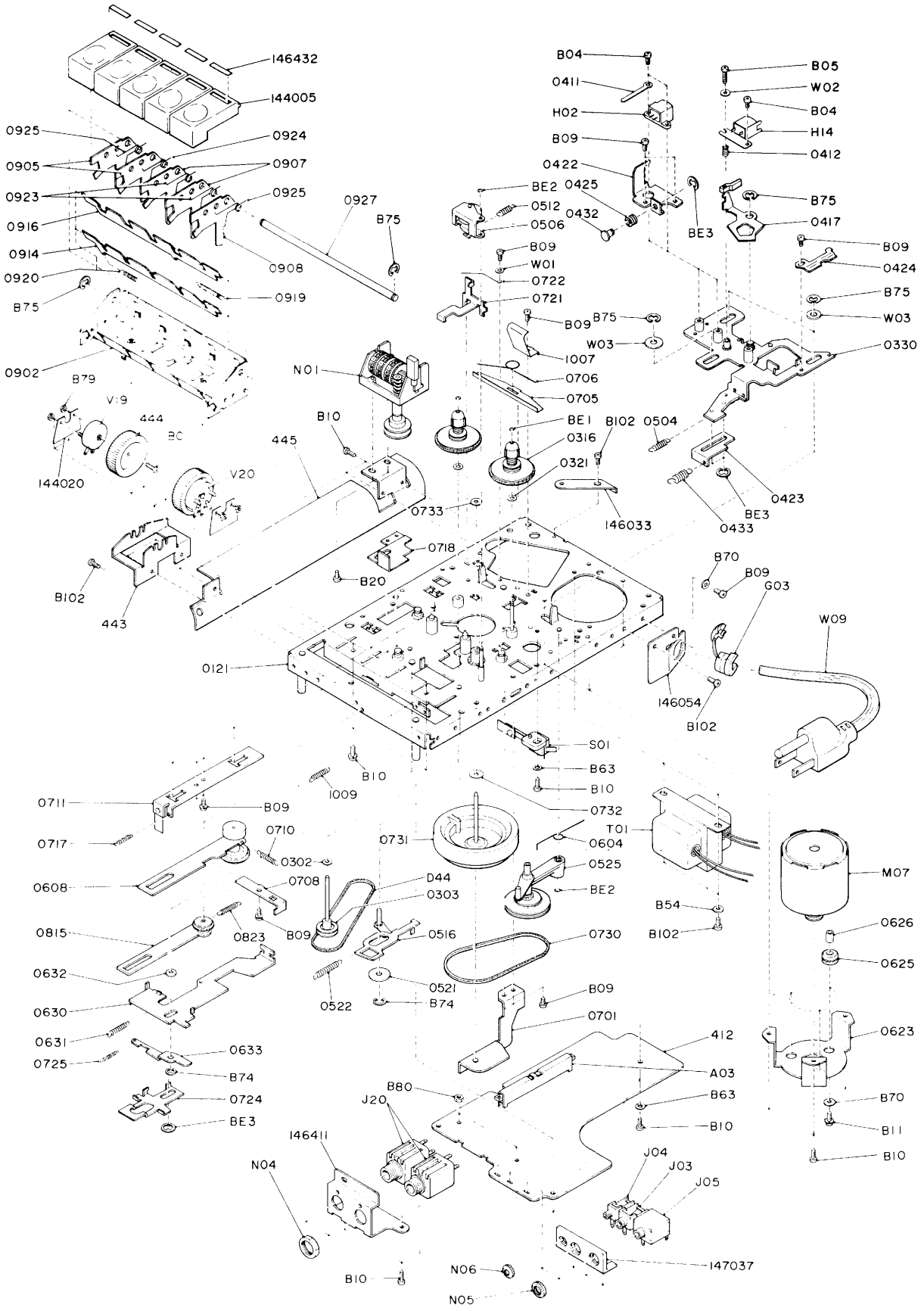
COMPONENT DIAGRAM



CASE ASSEMBLY



TAPE TRANSPORT



The **Audiotronics 147A tape recorder** is designed to be virtually maintenance free. However, during normal operation, dust, dirt, tape residue and evaporating oil forms a scum which builds on the heads, belts, idlers and capstan and degrades the recorder's performance. The following maintenance suggestions are recommended:

A. Heads should be cleaned monthly, during heavy usage, or at regular intervals.

B. Pressure rollers and capstan should be checked routinely and cleaned of any residue build-up.

C. Drive belts, idlers and pulleys should be checked yearly for wear and cleaned (or replaced) as needed.

D. Smooth movement of recorders' mechanical components insures dependable operation. All sliding parts which come in contact with each other should be cleaned and re-lubricated.

CAUTION: Excessive oiling should be avoided and care taken to prevent any lubricant from contacting belts, idlers or capstan.

E. Bias adjustment (see section 1.0) should be checked during any major routine maintenance.

F. Azimuth adjust (see section 2.0) should be checked during any minor maintenance or cleaning of head.

G. During normal use Erase and Record/Play Heads may become magnetized. This results in distorted sound and noisy recordings. Run a head demagnetizer (Degausser) slowly across the head to effectively eliminate any residual magnetism on the head.

1.0 AC BIAS

A. Insert a 100 ohm resistor in series with P/R head.

B. With recorder in record mode, adjust R31 (bias control) for 60mv rms across the 100 ohm resistor. This provides recommended 600 ua bias current.

NOTE: Due to normal variance in head resistance, above method is recommended to maintain peak performance in the recorder.

C. The AC bias current should be adjusted whenever play/record head is changed, or during routine maintenance, for optimum performance.

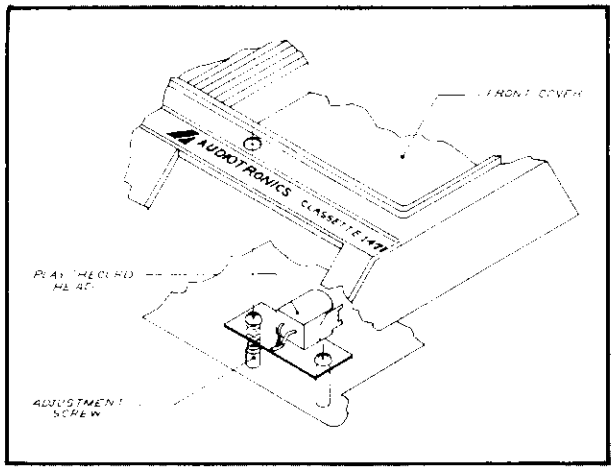
2.0 AZIMUTH ADJUST

A. Low sound output, especially in high frequency, is usually a result of incorrect head azimuth.

B. Observe recorder's output on a scope or R.M.S. meter.

C. Adjust record/play head during play mode, for maximum output using a standard pre-recorded azimuth tape. Any frequency between 6.3KHz and 10KHz is acceptable with 10KHz being recommended to insure peak performance.

D. The head adjusting screw, shown in the insert, is accessible through dress plug on recorder's front panel.



E. Azimuth adjustment is made whenever a record/play head is changed and during routine maintenance for optimum performance.

3.0 BATTERY OPERATION

A. Tape recorder will operate correctly if battery voltage is within 4.5 to 7.5 volts.

B. Recorder uses (4) 1.5V "C" type batteries. Insert batteries only in direction indicated or possible damage may incur.

C. A single LED (light emitting diode) is used as an operating indicator, recording indicator, and low battery indicator. In Play, FF, and Rewind, the LED flashes regularly to indicate that the unit is on and operating. In Record the LED is on and flashes off and on in response to the audio or input signal. The LED functions as a low battery indicator in all modes by going out when the battery voltage is below approximately 4.5 V. Resistor R30 on schematic is the threshold adjustment for LED turn off.

ELECTRICAL PARTS

(SEE SCHEMATIC DIAGRAM)

Resistors and capacitors are standard values, and are not listed. They may be obtained locally.

SYMBOL	PT NO.	DESCRIPTION
——	AM16	Mike, built-in
——	PJ22	Jack, aux input
——	PJ14	Jack, ext mike
——	PJ15	Jack, remote on-off sw
——	~~TH14~~ TH-3	Head, record play
——	~~TH129~~ TH-X	Head, erase
——	PJ16	Jack, headset
——	PJ16	Jack, headset or spkr
——	SS31	Speaker
S1	SW35	Switch, pwr
S2-( )	SW38	Switch, play-record
R32	RP107	Control, tone, 50kΩ
R33	RP104	Control, vol, 10kΩ
R31	RP91	Control, bias, 1kΩ
R30	RP108	Control, threshold, 5kΩ
——	TP30	Xformer, pwr, 120 Vline
——	TP31	Xformer, pwr, 240 Vline
OSC	TP28	Xformer, oscillator

SYMBOL	PT NO.	DESCRIPTION
L	TO8	Choke coil
M	MO42	Motor, 6 V
IC1	IC2	Integrated ckt LA3201
IC2	IC3	Integrated ckt LA4100
TH	TR67	Thermistor STD-35
LED	SR21	LED (green)
Q01	TR46	Transistor 2SB187
Q02	TR47	Transistor 2SB405
Q03	TR61	Transistor 2SC536
Q04	Same as Q03	
Q05	Same as Q03	
Q06	SR8	Diode 1S188
Q07	Same as Q06	
Q08	Same as Q06	
Q09	SR13	Diodes DS 132
Q10	SR14	Diodes DS 131
BATT	BA5	"C" cell (four) (6V)
——	CO100	AC cord, 3-wire (Grommet: GR19)

CASE PARTS

(SEE CASE EXPLODED VIEW)
(ELECTRICAL PARTS LISTED ELSEWHERE)

	CS-182				
146421	CS292	Top cover, complete	B95	WA82	Washer, door spring
	INCLUDING		B46	MS35	Screw, door spring
146423	CS271	Cassette door	* * *	* * *	* * * * * *
144007	CS165-1	Cassette door window	146426	CS276	Plug, azimuth hole
144018	CS163-4	Reflector	039	GR20	Mike mtg
437	CS278	Nameplate	144017	HW261	Clamp, spkr
442	SP16	LED spacer	146422	CS293	Bottom cover
441	SP17	LED mtg	144015	HW260	Battery contact
D20	SR21	LED (green)	I01	NA275	Battery label
B61	WA85	LED washer	144021	HW316	Battery spring
044	MG73	Grille cloth, mike	B12	MS34	Screw, case ass'y
435	CS279	Panel, vol & tone	438	CS294	Esc'n, input & output
436	CS280	Trim plate	146424	CS272	Door, cord storage
144011	HW262	Spring, cassette door	144012	CS174	Handle

TAPE DECK PARTS

(ELECTRICAL PARTS LISTED ELSEWHERE)

SYMBOL	PT NO.	DESCRIPTION
147037	HW508	Panel, input mtg
0701	HW294	Bkt, flywheel
0730	HW307	Belt, motor
0604	HW282	Spring, idler take up
0525	HW295	Take up idler ass'y
B11	MS48	Screw, Ph hd
B70	WA50	Lkwasher, split
0623	HW302	Bkt, motor
412	CB35	PC board ass'y
B80	NU15	Nut, jack bkt
0330	HW509	Subchassis
0423	HW510	Slip link, play key
B20	MS49	Screw, Ph hd
0625	GR11	Grommet, motor
0626	SP9	Spacer, motor
B54	WA57	Washer
B102	MS37	Screw, Ph hd self tap
B05	MS45	Screw, Ph hd
0411	CL6	Clamp, cable
0412	HW274	Spring, R/P head
14405	CS168	Key button
0925	HW332	Spring, key button
0924	HW334	Spring, key button
0923	HW331	Spring, key lever
0905	HW330	Lever, key button
0907	HW328	Lever, key button
0908	HW329	Lever, key button
0916	HW524	Lever, record lockout
0914	HW523	Lever, key locking
0920	HW522	Spring, key lever
0919	HW506	Spring, record lockout
0927	HW271	Shaft, key button
B75	CL8	E ring
0902	HW520	Key button holder
B10	MS37	Screw, pan hd
N01	HW304	Counter
0711	HW519	Record lever
0717	HW279	Spring, record lever
0608	HW298	Idler ass'y, review
0710	HW278	Spring, idler ass'y
0815	HW296	Rewind lever ass'y
0823	HW277	Spring, rewind lever
0630	HW299	Stop lever
0631	HW279	Spring, stop lever
0725	HW280	Spring, cue & review
0633	HW300	Lever, cue & review
B74	CL5	E ring
0724	HW528	Review lever
BE3	CL7	E ring
BE2	CL10	E ring
0506	HW~~284~~ 607	Pinch roller ass'y
0512	HW514	Spring, roller ass'y
B09	MS46	Screw, Ph hd
0721	HW308	Lever, record interlk
0722	HW338	Spring, record interlk

SYMBOL	PT NO.	DESCRIPTION
1007	HW283	Spring, cassette
0706	HW339	Spring, brake blk
0705	HW525	Brake block
BE1	CL9	E ring
0316	HW288	Spindle take up & feed
0321	WA81	Washer
B102	MS37	Screw, ST
146033	HW503	Bkt xformer
445	HW502	Battery holder
0718	HW526	Bkt, single key record
B10	MS47	Screw, Ph hd
1009	HW277	Spring, rewind lever
0632	WA57	Washer
804	MS44	Screw, Ph hd
0708	HW527	Bkt, idler ass'y review
B09	MS46	Screw, Ph hd
0733	WA53	Washer, plastic
0302	WA81	Washer, mylar
B79	NU29	Nut, vol cntl
0121	HW507	Chassis
B20	MS49	Screw, Ph hd
146054	HW501	Bkt, strain relief
G03	GR19	Grommet, strain relief
B102	MS37	Screw, Ph hd, ST
B70	WA50	Lkwasher, split
B63	WA48	Lkwasher, IT
0732	WA51	Washer, mylar
0731	HW293	Flywheel ass'y
0303	HW291	Pulley, counter
D44	HW315	Belt, counter
0516	HW311	Lever, auto stop
0521	WA55	Washer, flat
B74	CL7	E ring
0522	HW281	Spring, auto stop lever
146411	HW505	Bkt, jack mtg
N04	NU28	Nut, jack mtg
BW5	WA54	Washer, flat
0422	HW511	Lever, cassette
0425	HW512	Spring, cassette lever
0432	HW513	Shaft, spring
0417	HW515	Arm, auto stop
0424	HW516	Cam, take up clutch
W03	WA83	Washer
0504	HW517	Spring, subchassis
144020	SO20	Insulator
433	HW518	Bkt, control mtg
444	KN35	Knob
B01	MS43	Screw, pan hd
N06	NU27	Nut, jack
N05	NU18	Nut, aux jack
W02	WA84	Washer
146432	NA224	Color label, green
146432	NA225	Color label, red
146432	NA226	Color label, yellow
146432	NA227	Color label, blue